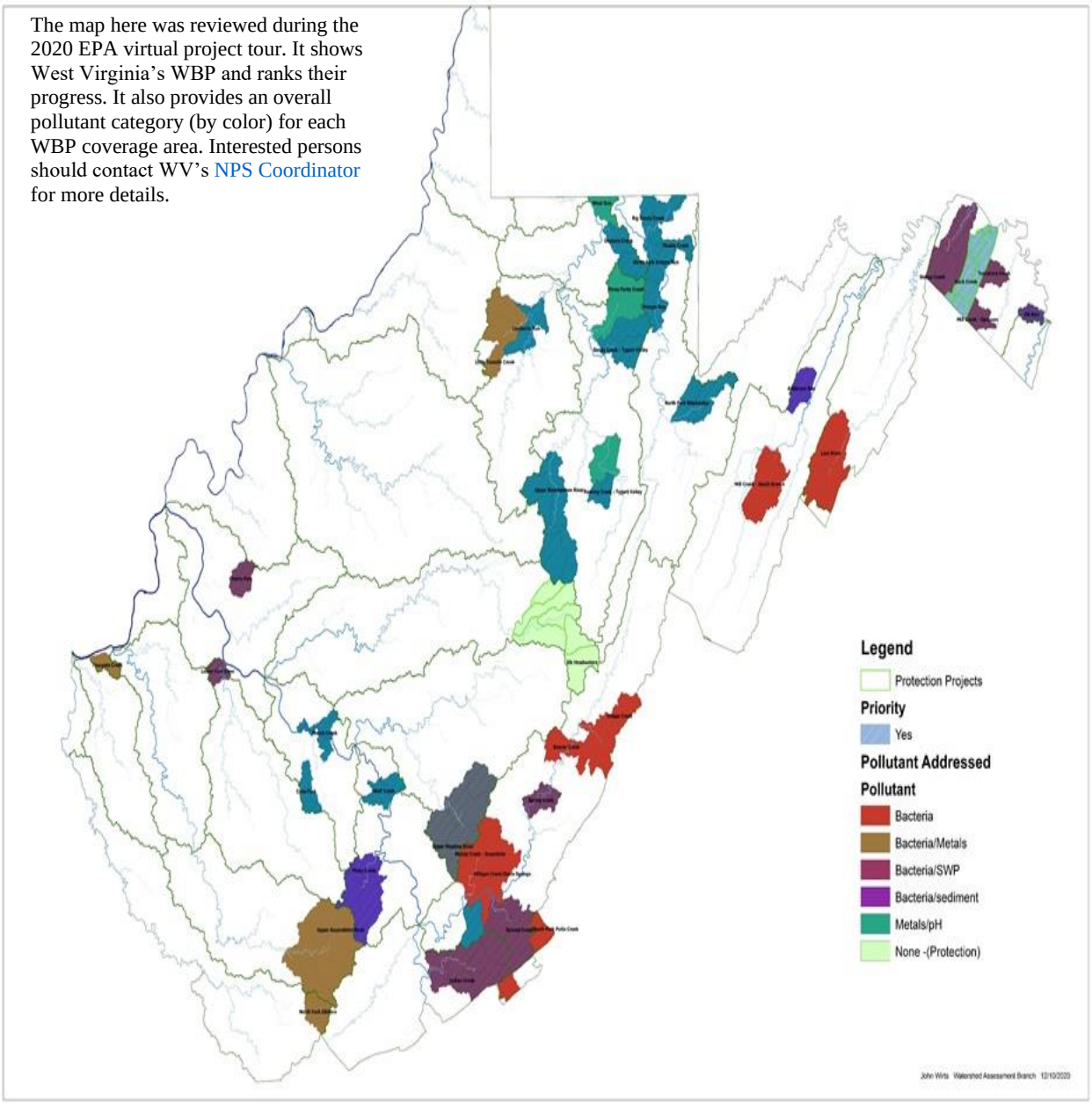
Watershed plan highlights

No new watershed based plans (WBPs) were developed in 2020; however, there are several revisions occurring and we anticipate at least two-three new WBPs in 2021-2022. Several with recent activity are highlighted in the next section.

Figure 4. West Virginia watershed based plans map.



There are 42 USEPA approved WBPs and two watershed protection plans (WPPs) in the state. Roughly 20% of those are inactive. WIB anticipates two more plans in late 2021 or early 2022.

Watershed plan highlights

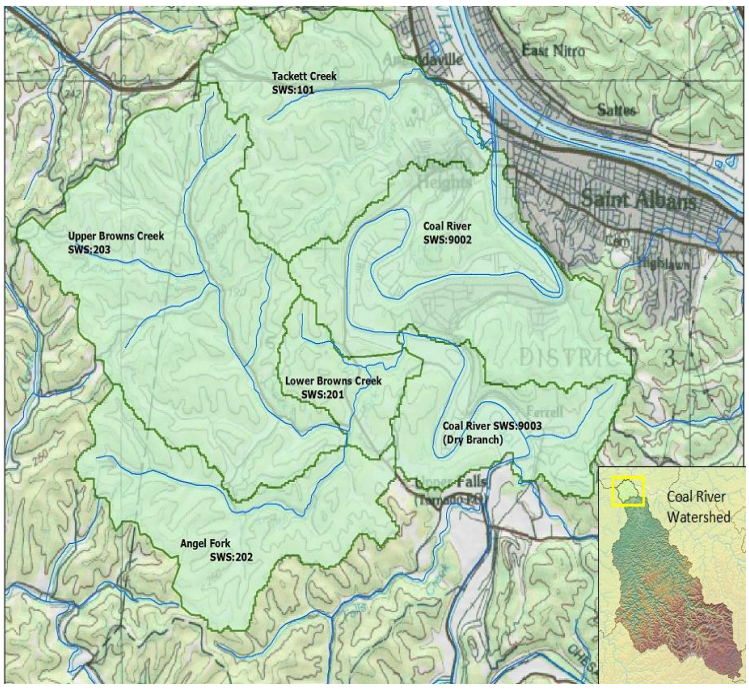
Lower Coal River watershed plan

Watershed information
HUC12: 050500090608
Sponsor(s): Coal River Group, WV Conservation Agency, local landowners, other State and Federal partners

Contact(s): Justin Hunt, Project Manager and Bill Currey, CRG Chairman

Introduction

Figure 5. Lower Coal River WBP map.



The Browns Creek-Coal River watershed is defined by the U.S. Geological Survey (USGS) 12-digit HUC (050500090608) and is included in the Coal River TMDL. The Browns Creek-Coal River watershed is referred to in this plan as the *Lower Coal River watershed*. The area is part of the larger Coal River watershed, 8-digit HUC (05050009), an 891 square mile watershed draining the Big Coal, Little Coal, and main stem Coal Rivers.

The watershed forms in the highlands of Boone and Raleigh counties and flows north to the Coal's confluence with the Kanawha River. The Lower Coal River area addressed in this plan makes up the northern-most reach of the Coal River watershed and includes the mouth of the Coal River at St. Albans, WV. The Lower Coal River area drains 14,371 acres (22.5 square miles) in Kanawha and Putnam counties. The watershed consists of the Coal River, from below Upper Falls in Tornado, WV, to the confluence with the Kanawha River in St. Albans, WV. Major tributaries within the area consist of Browns Creek, Angel Fork of Browns Creek, and Tackett Creek.

One of many successful septic leach field installations.

Highlights

The goal of the Browns Creek septic remediation projects is to repair and replace failing septic systems. CRG now has two §319 projects since 2016. Twenty-failing septic systems have been replaced thus far. All replacements were traditional absorption field septic systems. Concrete and plastic tanks were used depending on *Kanawha County Health Department* (KCHD) recommendations. The replacements were successful due to CRG's marketing and recruiting process. At the start of the project the CRG hosted homeowners, contractors, and consultants at the CRG building to educate them about the §319 projects. Outreach continued throughout with signage, social media, and direct mailing methods. The other aspect of the grant was the septic pumping portion. The original goal of the pumping effort was 30 systems. However, CRG

discovered that more homeowners need the complete replacement or repair rather than simple maintenance. A total of five homeowners had their functioning septic tanks pumped.

CRG volunteers sample Browns Creek during low flow.

Results

The goal of the first project was to remove 1.07E+12 cfu loads from Browns Creek and Angel Fork. With twenty-one septic tanks replaced and five septic tanks pumped out; fecal coliform counts are progressively decreasing in the Browns Creek and Angel Fork tributaries, which is supported by water quality monitoring data. Note: More details are provided in the project write-up found later in this report. CRG uses WVDEP's conversion model – originally developed by Alvan Gale and later refined by the current NPS Coordinator. The spreadsheet model estimates 2.63E+13 cfu loads have been reduced thus far. This estimate will be further quantified by CRG's monthly monitoring regiment.

The CRG outreach strategy has recruited thirty-five residents with the NPS-1619 and NPS-1724 §319 projects, plus a long waiting list.

Funding and partners

Table 4. Browns Creek funding Phase I-II.

§319 projects	Funding		Fiscal years
	§319	Match	
Browns Creek Septic Phase I	$94,000	$62,667	2016
Browns Creek Septic Phase II	$186,000	$124,000	2020
Totals	**$382,000**	**$186,667**	
Funds spent thus far	$152,710	$102,200	

Example of signage posted throughout Browns Creek watershed. A Real Estate type metal frame held the signs. The frames were donated.

The WBP and projects are supported by the local community. Successful implementation efforts are due largely to CRG, with assistance from KCHD and WVCA. WVCA has been a key financial partner and has been a willing fiscal agent throughout the life of the projects. KCHD sanitarians inspect and approve each project and do follow-up visits when necessary. The WPP has supported CRG staff for five-years and has allowed them to dedicate project managers to this effort. WVDEP's WBC and NPS Coordinator have provided §319 technical and administrative support throughout. *WPP funding* has supported CRG staff from the inception of this effort. This funding source will be available for at least one more state fiscal year.

Watershed plan highlights

Back Creek watershed plan

Watershed information

HUC12: 020700040404, 020700040405, 020700040406, 020700040407, 020700040408, 020700040409

Sponsor(s): WV Conservation Agency, local landowners, Blue Heron Environmental Network, other State and Federal partners

Watershed description

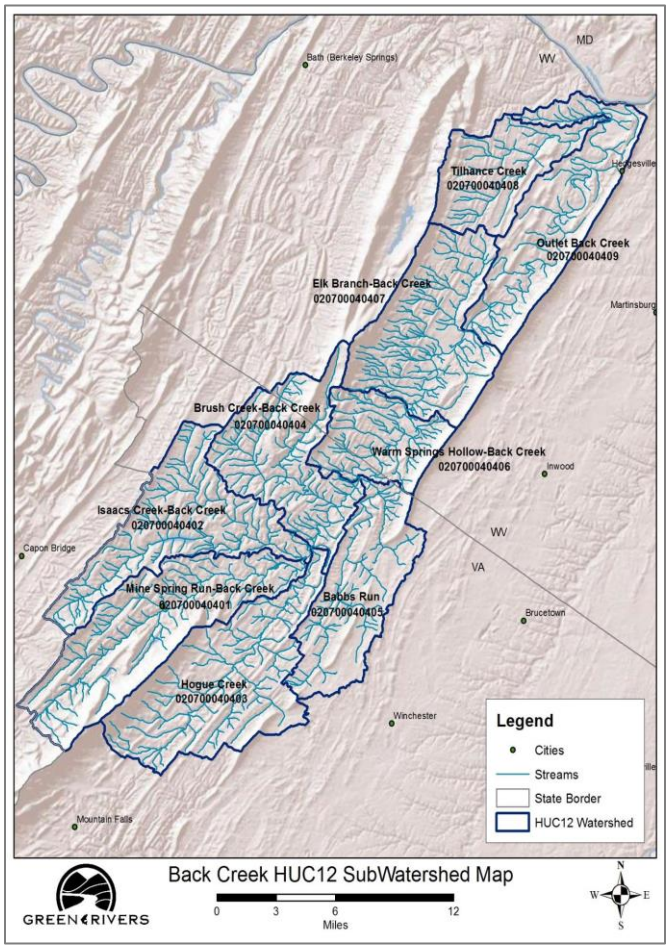


Figure 6. Back Creek WBP map

The Back Creek watershed is part of the Potomac Direct Drains and Chesapeake Bay watersheds. It extends from Frederick County, VA, to Berkeley and Morgan Counties, WV, and drains 274 square miles. The watershed is comprised of distinctive, high-quality cold and warm water streams and unique shale bedrock outcrop topography. Back Creek is one of the few watersheds in the eastern panhandle of WV that does not have water quality impairments, but there are threats. The watershed contains large areas of undeveloped and forested land, and rare, threatened, and endangered species have been documented throughout the West Virginia portion of the watershed.

Goals

USEPA approved the watershed protection plan (WPP) developed for *Back Creek* in 2014. The WPP provides a framework for achieving the goals of protecting and restoring the watershed. The WPP recommended management measures include protecting forested areas, farmland, and wetlands from development, zoning and ordinance enforcement for low impact development, implementation of agricultural BMPs, and reducing erosion through natural stream design.

Partnerships

WVCA and WVDEP have partnered with a variety groups and local stakeholders throughout the implementation of the WPP, including the *Blue Heron Environmental Network* (BHEN), who has been monitoring water quality in Back Creek and working to protect the watershed many years prior to the WPP. Other partners include the *Berkeley County Farmland Protection Board* (BCFPB), the WV Division of Forestry (WVDF), the WV Division of Natural Resources (WVDNR), and the *Eastern Panhandle Conservation District* (EPCD). WVCA's AgE and USDA Farm Bill programs are also implemented throughout the watershed.

Project highlights

Under Phase I, three stream restoration sites were identified and assessed. Since then, one natural stream design has been implemented with two more in progress, one porous paver project has been installed, and a

forestry workshop was held for landowners who own large tracts of forested land in the watershed. The workshop promoted and demonstrated healthy forest management practices. Probably the most critical components have been the purchase of conservation easements on high-quality agricultural land, which protects the land in perpetuity from development, subdivision, or non-agricultural commercial activities, even if that land is sold. This is especially important for the watershed since most of it lies within Berkeley County, the fastest-growing county in the state. To date, easements have been purchased on five parcels consisting of 251 acres. These properties contain or border 8,360 feet of Back Creek or its tributaries, which contributed to the higher ranking during the selection process. This practice is key to preserving current forested and agricultural land, protecting riparian areas, and maintaining the water quality of Back Creek. This project is currently in Phase III.

Figure 7. Completed Back Creek projects 2012 – 2020.

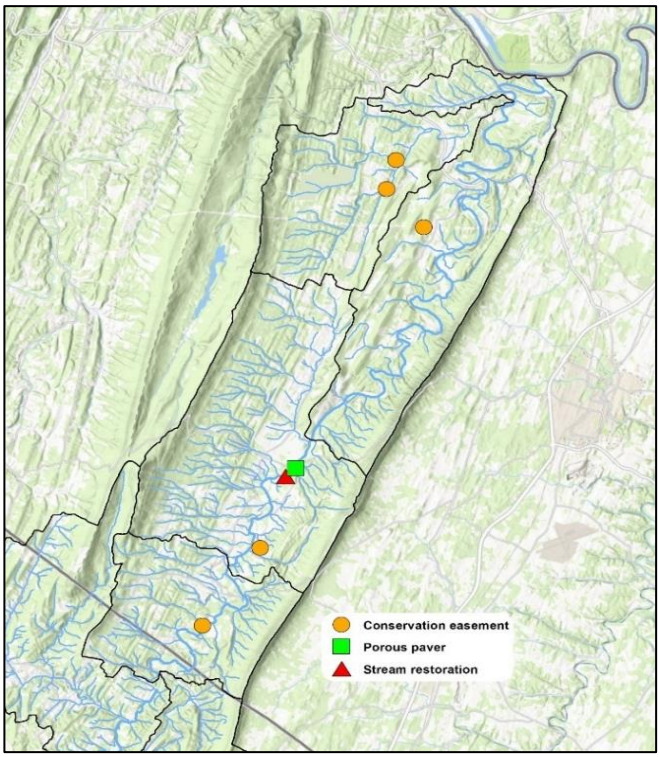


Table 5. Back Creek summaries.

Practices

Natural stream design	915 feet
Conservation easements	251 aces
Porous pavers	0.05 acres

Load reductions

Sediment (tons/year)	0.92
Nitrogen (lbs/year)	0.69
Phosphorus (lbs/year)	0.05
TSS (lbs/year)	31.1

Funding

Source	Award	Match
§319 Phase I	$30,000	$20,000
§319 Phase II	$209,450	$221,689
§319 Phase III	$303,450	$202,774
§319 AGO	$20,000	$14,000
CB-LIF	$56,100	$101,419
Total	$619,000	$559,882
Overall total	**$1,178,882**	

Back Creek stream restoration.

Porous paver installation at a public stream access on Back Creek.

Watershed plan highlights

Indian Creek watershed plan

Watershed information

HUC12: 050500020701, 050500020702, 050500020703, 050500020704, 050500020705

Sponsor(s): WV Conservation Agency, local landowners, Indian Creek Watershed Assoc., other State and Federal partners

Introduction

Indian Creek is a significant tributary to the New River. Its watershed begins in the mountains of Monroe County and enters the New River near Forest Hill in Summers county. The Indian Creek watershed is a rural watershed with the predominant land use being grazing-based agriculture with small communities and farms scattered throughout. The watershed is 122,788 acres with over 45% being pasture and cropland. Karst geology is a significant feature within the watershed and creates special challenges for restoration efforts. Karst is limestone geology typified by sink holes and underground streams which can allow pollutants to rapidly enter the groundwater and be transported to springs that enter surface streams.

The Indian Creek WBP was approved in 2017. It was developed for the purpose of implementing a *National Water Quality Initiative* (NWQI) area for the USDA Natural Resources Conservation Service (NRCS). As the project came together certain limitations were recognized, and §319 funding became vital to the project. WVCA and NRCS worked together to develop the program, utilizing NRCS funding for grazing and water system development, while §319 funds would fill in the gaps for areas not funded from the NRCS ranking process. §319 funds would also be used to address outreach and issues with failing septic systems.

Project highlights

To date, §319 grant awards and NRCS funding have assisted 56 landowners on 9,731 acres of karst land - 55 grazing and alternative livestock watering systems have been installed. Within these projects, approximately 17,432 feet of streams has livestock exclusion fencing, which has led to the development of about 160 acres of buffers. These practices aid in evenly distributing livestock waste throughout pasture grasslands where the nutrients can be utilized by vegetation and bacteria survivability is significantly reduced due to UV light exposure. Two failing septic systems have also been addressed, one periodic failure and one permanent failure. The overall modeled load reduction for practices implemented through §319 programs is 1.13E+13.

Livestock exclusion fencing

Most of the practices funded with §319 and NRCS have been implemented in the Burnside Branch. Additionally, NRCS has assisted cooperators with practice implementation on five farms within the Upper Indian Creek and four farms within the Lower Indian Creek. The photos demonstrate livestock exclusion fence. The left photo provides a buffer around a pond located on karst land while the fence in the right photo excludes a surface running stream.

Watershed plan highlights

Table 6. Indian Creek WBP progress January 2018 – September 2020

Activities	Burnside Branch			Upper Indian Creek			Lower Indian Creek			Middle Indian Creek			Rock Camp Creek		
	§319	USDA	State	§319	USDA	State	§319	USDA	State	§319	USDA	State	§319	USDA	State
Total cooperators with cost-share programs	11	39			5			1							
Total cooperators with technical assistance								3							
Total grazing systems installed	10	39			5			1							
Total alternative watering systems installed	10	39			5			1							
Total acres of buffers installed	160														
Total feet of stream protected	17,432														
Total acres of karst land protected		9,731													
Cooperators provided w/technical assistance			2									4			1
Cooperators assisted w/cost share programs			14			2						5			4
Grazing systems installed			5			1						2			3
Alternate water systems installed			5			1						1			1
State funds spent			$19,305			$745						$7,882			$5,496

Outreach

An outreach event was held on November 4, 2019 at WVU's *Willow Bend demonstration farm*. The purpose of this event was to promote projects and demonstrate installation of specific BMP's. Approximately 50 local farmers attended the event.

1

2

3

1) Attendees were presented info about cost share programs and water quality protection. 2) Staff demonstrate the proper installation of a recycled tire trough for watering livestock. 3) Staff demonstrate the proper installation of fencing.

Results

Table 7. Indian Creek monitoring summary.

2019-2020 monitoring summary	Monitoring sites					
	1	2	3	4	5	Average
> 200 cfu/100 mL exceedances	9	6	7	6	4	6.4
Percent exceedance	75.0%	50.0%	58.3%	50.0%	33.3%	53.3%

Consistent water quality monitoring for fecal coliform has been conducted since 2019. In the 12 months between September 2019 and September 2020, results exceeded the state water quality standard nine times in the upper watershed and four times in the lower portion of the watershed. During the 2019-2020 sampling period, there were several exceedances, all of which occurred during higher precipitation events. Water quality results thus far, indicate that BMPs associated with unrestricted access to surface water and karst

features are having a positive impact. The resource concern that needs addressed is more closely related to stormwater, soil quality and infiltration rates. Additional monitoring is needed for definitive conclusions.

Partners and funding

Partners in this effort include USDA-NRCS, WVDEP-WIB, both of whom provide funding support. *Greenbrier Valley Conservation District* approves landowner contracts and administers the funds. WVCA provides technical assistance to landowners, monitors water quality, and provides overall project management. Outreach is a partnership between WVCA, WVU Extension Service and *Indian Creek Watershed Association* (ICWA).

Photo: *WVCA staff conduct water monitoring along Indian Creek. At site 5 a Van Dorn horizontal sampling bottle is lowered from the bridge into the stream. Once retrieved, 100 ml is collected and taken to a commercial lab and analyzed for fecal coliform. On site, a YSI multi meter is used to analyze for pH, temperature, and dissolved oxygen.*

Table 8. Indian Creek WBP funding resources.

Total funds spent	
§319 grants	$167,588
USDA-NRCS funding	$1,441,052
State and local funding	$98,355
Total	$1,706,995